

1 We claim:

2 1. An apparatus for providing aquatic therapy and exercise  
3 comprising:

4 a. A tank for retaining fluid, said tank having a front  
5 end, a back end, a top near the fluid top when filled with fluid, and  
6 a bottom between the two ends;

7 b. Treadmill means in said tank having driving means for  
8 rotating the treadmill and having means for adjusting the speed of  
9 rotation;

10 c. Means for lifting the treadmill in the tank from one  
11 end of the tank.

12 2. The apparatus in claim 1 wherein the treadmill driving  
13 means operate in conjunction with the end lift means.

14 3. An apparatus for providing aquatic therapy and exercise  
15 comprising:

16 a. A tank for retaining fluid, said tank having a front  
17 end, a back end, a top near the fluid top when filled with fluid, and  
18 a bottom between the two ends;

19 b. Treadmill means in said tank having driving means for  
20 rotating the treadmill, said driving means having at least one  
21 flexible linkage having two ends about which the linkage rotates;

22 c. Means for lifting the treadmill in the tank said means  
23 having at least two rigid supporting members pivotably connected at  
24 a pivot point, and wherein one end of the treadmill driving means  
25 rotates about the pivot point.

26 4. The apparatus in claim 3 wherein the means for lifting the  
27 treadmill in the tank are located at one end of the tank.

28 5. The apparatus in claim 3 wherein the treadmill means have

1 means for adjusting the speed of the rotation of movement of the  
2 treadmill.

3 6. The apparatus in claim 4 wherein the treadmill has means  
4 for adjusting the speed of the rotation of the treadmill.

5 7. The apparatus in claim 4 wherein the tank has a plurality  
6 of jet nozzles through which water flows at a desired rate of flow  
7 into the tank.

8 8. The apparatus in claim 7 having means for adjusting the  
9 water flow rate through the nozzles.

10 9. The apparatus in claim 8 wherein the means for controlling  
11 the water flow rate through the nozzles is comprised of a water pump  
12 pumping at a rate responsive to and determined by the electrical  
13 power, and further having means for adjusting said power to the water  
14 pump.

15 10. The apparatus in claim 6 wherein the tank has a plurality  
16 of jet nozzles through which water flows at a desired rate of flow  
17 into the tank.

18 11. The apparatus in claim 10 having means for adjusting the  
19 water flow rate through the nozzles.

20 12. The apparatus in claim 11 wherein the means for controlling  
21 the water flow rate through the nozzles is comprised of a water pump  
22 pumping at a rate responsive and determined by the voltage, and  
23 further having means for adjusting the voltage to the water pump.

24 13. The apparatus in claim 5 wherein the tank has a plurality  
25 of jet nozzles through which water flows at a desired rate of flow  
26 into the tank.

27 14. The apparatus in claim 13 having means for adjusting the  
28 water flow rate through the nozzles.

1           15. The apparatus in claim 14 wherein the means for controlling  
2 the water flow rate through the nozzles is comprised of a water pump  
3 pumping at a rate responsive and determined by the voltage, and  
4 further having means for adjusting the voltage to the water pump.

5           16. The apparatus in claim 15 wherein the treadmill has  
6 adjustable impact absorption means.

7           17. The apparatus in claim 5 having means for monitoring the  
8 speed of the treadmill, means for monitoring the desired chemical  
9 requirements of the water, means for adjusting the chemical  
10 requirements of the water, means for monitoring the rate of water  
11 flow and means for electronically adjusting the same, memory and  
12 electronic microprocessor means for recording and adjusting said  
13 desired monitored items.

14           18. The apparatus in claim 17 having infrared remote control  
15 means for operating the microprocessor control system.

16           19. The apparatus in claims 1, 2, 4, 6, 7, 8, 9, 10, 11, 12,  
17 17, or 18 wherein the end lift means is comprised of a flexible  
18 linkage having two ends, one of which is located at the end of the  
19 treadmill and the other of which is located near the bottom of the  
20 tank.

21           20. The apparatus in claim 18 having emergency stop means near  
22 the top of the tank accessible for the user to instantly stop all  
23 operating functions of the apparatus.

24           21. The apparatus in claims 17 or 18 having means for sensing  
25 the desired system status and sending corresponding electrical  
26 signals representing said respective status signals, means for  
27 electrically isolating the sensing means from the microprocessor  
28 control means, means electrically connected to the microprocessor for

1 storing said electrical status signals, output means connected to the  
2 microprocessor for sending electrical control signals, means for  
3 effecting the system status in response to the electrical control  
4 signals; means for isolating the electrical sending means from the  
5 means for effecting the system status.

6 22. The apparatus in claim 21 wherein the electrical isolation  
7 means for converting the electrical signals to lightwave frequency  
8 signals; means for receiving said lightwave frequency signals and  
9 converting same back to electrical signals.

10 23. The apparatus in claim 21 wherein the electrical isolation  
11 means is comprised of means for converting the electrical signals to  
12 magnetic signals; means for receiving said magnetic signals and means  
13 for decoding said magnetic signals and converting them to electrical  
14 signals.

15 24. The apparatus in claims 1, 2, 4, 6, 7, 8, 9, 10, 11, 12  
16 wherein the end lift means is comprised of a flexible linkage having  
17 two ends, one of which is located at the end of the treadmill and the  
18 other of which is located near the bottom of the tank, and having  
19 means for sensing desired system status and sending corresponding  
20 electrical signals representing said respective status signals, means  
21 for electrically isolating the sensing means from the microprocessor  
22 control means, means electrically connected to the microprocessor for  
23 storing said electrical status signals, output means connected to the  
24 microprocessor for sending electrical control signals, means for  
25 effecting the system status in response to the electrical control  
26 signals; means for isolating the electrical sending means from the  
27 means for effecting the system status.

28 25. A method for controlling a hydrotherapy and exercise device

1 with integrated lift and treadmill means, said method comprised of  
2 the steps of:

3 a. Sensing the various desired system characteristic at  
4 the desired time;

5 b. Sending digital signals corresponding to the sensed  
6 status to a microprocessor utilizing electrical isolation means;

7 c. Comparing said system status signals with desired  
8 status using microprocessor means;

9 d. Sending signals from the microprocessor to effectuate  
10 changes in the system characteristics;

11 e. Changing the system characteristics in response to the  
12 electrical signals received from the microprocessor.

13 26. A method for controlling a hydrotherapy and exercise device  
14 with integrated lift and treadmill means, said method comprised of  
15 the steps of:

16 a. Sensing the level and speed of the treadmill and  
17 chemical characteristics of the water.

18 b. Sending digital signals corresponding to the sensed  
19 status to a microprocessor utilizing electrical isolation means;

20 c. Comparing said system status signals with desired  
21 status using microprocessor means;

22 d. Sending signals from the microprocessor to effectuate  
23 changes in the system characteristics;

24 e. Changing the system characteristics in response to the  
25 electrical signals received from the microprocessor.

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